Managing Pain in Children

Changing treatment of headaches

LEORA KUTTNER, PHD

SUMMARY

With growing understanding of the pain system and the variables that contribute to pain-suppressing mechanisms, treatments combining pharmacologic and psychologic methods are becoming the norm for managing pediatric pain. For headaches, however, the trend is away from medication and toward self-management strategies using relaxation, hypnosis, and lifestyle changes.

RÉSUMÉ

Grâce à une meilleure compréhension de la nature de la douleur et des variables qui contribuent aux mécanismes capables de supprimer la douleur, les traitements combinant les méthodes pharmacologiques et psychologiques deviennent progressivement la norme pour traiter la douleur pédiatrique. Dans le cas des céphalées, cependant, la tendance est de s'éloigner de la médication et de s'orienter vers des stratégies visant l'autocontrôle en mettant à profit la relaxation, l'hypnose et le changement des habitudes de vie.

Can Fam Physician 1993;39:563-568.

WE HAVE KNOWN FOR SOME TIME that the amount of tissue damage does not directly predict the quality and intensity of pain sensations.[1,2] Clinicians in practice notice a range of responses from children of the same age to the same painful stimulus, such as immunization injections.[3]

New understanding of pain

In the last 20 years, neurophysiologic, anatomic, neurochemical, psychologic, and medical research into the nociceptive processing system indicates that the pain system, previously regarded as fixed and rigid, is in fact a flexible and complex sensory system and that the neuronal activity evoked by a noxious stimulus can be modified by internal pain-suppressing mechanisms. This interaction makes the perception of pain a strikingly plastic and complex sensory system in which cortical activity has a crucial role, influencing the pain perceived.

A child's pain-perception system has the capacity to respond differently to the same noxious stimulus over time, and this change cannot simply be explained by the passage of time. Variables determining the child's perception of pain consist of the meaning of the pain for the child, how the pain is explained to the child by the physician, the context in which the pain occurs, earlier experience with pain, fatigue, degree of illness, anxiety level, cultural attitudes, and parental reaction to the child's pain (*Figure 1*). These variables interact over time and combine to transform the child's experience of pain into the perception of a particular pain at a particular moment.

Parental involvement

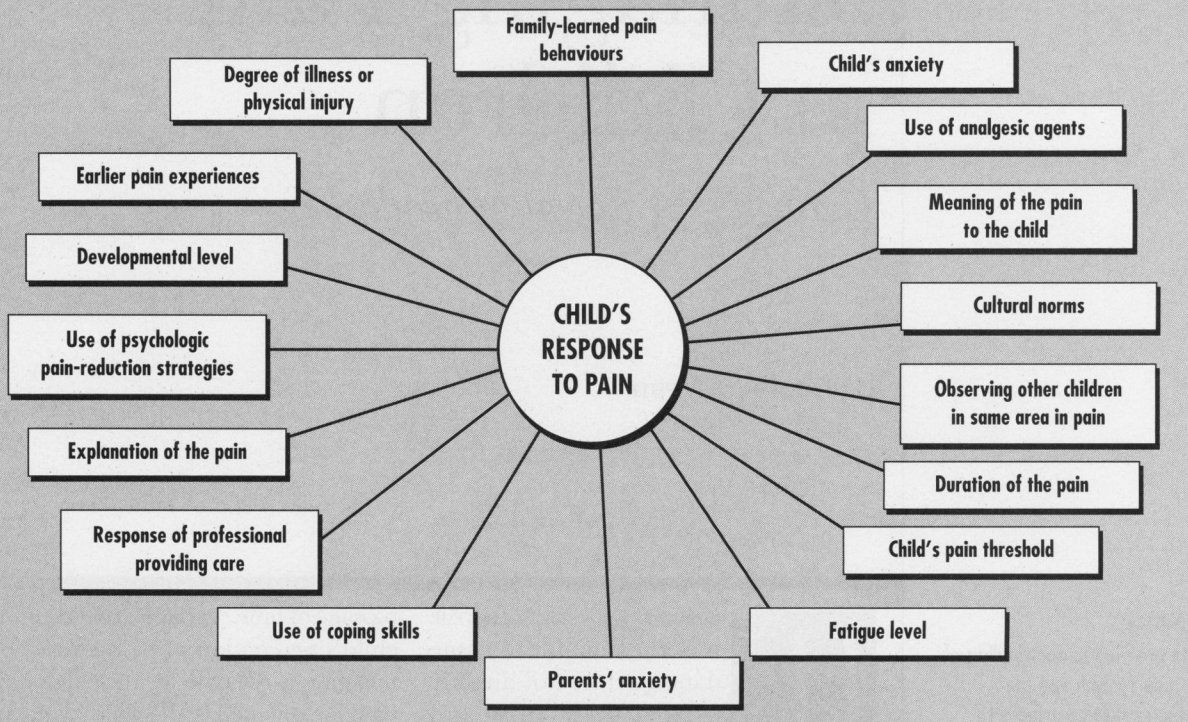
Parents are an integral part of the pain assessment and management process. Establishing the parents as allies enables them to be valuable informants and to reinforce treatment at home. Nevertheless, for better or for worse, parental attitudes about pain are known and often reproduced by their children. These include beliefs and anticipatory statements about pain.

Toddlers and preschool-aged children are most responsive to these situational and contextual factors of pain. They "read" adults' movements and facial expressions and react quickly to any hint of threat to their body or their security (such as separation from a parent).

Recent research indicates that parents are now asking for more information about, and greater participation in, procedures

Dr Kuttner *is a Clinical Psychologist in private practice and is Assistant Clinical Professor in the Department of Pediatrics at the University of British Columbia in Vancouver.*

Figure 1. **Factors affecting a child's response to pain**



that cause their children pain.[4] Involving parents by providing direction and instruction about what they can do ensures that they become supportive allies rather than obstacles.[5,6] The physician's explanation of the factors contributing to the child's pain can help shift the parent's attitude and behaviour. The child in turn will quickly read these cues and possibly alter his or her perception of the pain, behavioural response, and memory of the painful experience.

Family physician's central position

The family physician is in a unique position with the child and family to assess the child's pain. By providing care for the child and family over time, the family physician develops a special role in the life of a family. She or he can be privy to confidences and personal experiences and can earn the family's trust. The family's doctor is in a good position to evaluate the child's present pain problem fully, bearing in mind all the complex interacting variables, organic and nonorganic, peripheral and central.

The challenge for the family physician is to note and appreciate the unique attributes of each child in pain, such as the meaning of the pain for that child and parents and the child's temperament and physical status. Asking the question, "Why *this* pain, at *this* time, in *this* child?" and, if needed, "in *this* family?" can further an understanding of the more puzzling pains. The overall and long-term effectiveness of pain-reduction interventions will be determined by addressing all contributing factors.

In an informal survey of my colleagues in family practice, I asked, "What is the most common pediatric pain problem that you encounter in your practice that turns out to be complex and puzzling?" Most answered that headaches were the most common, with abdominal pains the second most common. In the remainder of this article, I shall briefly examine some of the research on childhood and adolescent headaches and discuss assessment and treatment guidelines. I shall focus on how the current appreciation of the plasticity of the pain system can be applied to

enhance outcome in managing children's headaches.

Children's and adolescents' headaches

Children's headaches are commonly regarded as an unimportant problem. However, for a subgroup of children and adolescents who have frequent and severe pain, headaches have a significant impact on their lives, disrupting schooling, family life, and their well-being.

Epidemiologic research reports headaches in children younger than 5 years and suggests that prevalence increases with age.[7] Under age 7 years, boys tend to report more headaches than girls; however, by age 14, the rate for girls (14.8%) is almost 2.5 times greater than that for boys (6.4%).[8,9] While the studies suggest that the headaches will spontaneously remit as the child matures, the recovery rates in these studies vary widely, from 3% to 80%.[7]

Recurrent pediatric headaches have been classified as classic migraine in approximately 3% to 4% of cases, common migraine in 7% to 20%, and tension headache in 47% to 48%.[10,11] Headaches can also be caused by intracranial or extracranial disease and sinus congestion. The main purpose in a diagnostic workup is to rule out head, face, neck, or central nervous system disorders as the cause of the headache. McGrath and Humphreys[12] suggest ways to differentiate migraine, muscle contraction, sinus, and pathologic headache.

Assessment

One must obtain a thorough and accurate description of the pain from the child. As part of the diagnostic workup, it is important to explore the context of the child's pain and the situations that could promote or exacerbate it. For a comprehensive pain inventory to assess recurrent and chronic pain in children 5 to 17 years, the "Children's Comprehensive Pain Questionaire," developed by Patricia McGrath,[7] offers a structured interview format that will provide consistency over cases. Responses to the questions in *Table 1* can provide a picture of the child's lifestyle and coping strategies and assist in selecting appropriate treatments.

Asking these questions accomplishes several goals. Apart from obtaining a more detailed assessment of the nature and scope of the pain, asking these questions establishes a working alliance between physician and child. Implicit in asking questions is the message that the child is the authority on his or her body and pain experiences, and is the one (not the parent) who can best describe and explain the pain. Unless the child is unresponsive, it is good policy to ask the child all these questions, adjusting your language to his or her developmental age. In the process, the child can begin to feel less overwhelmed by the pain and more empowered to manage the headache effectively, whatever its origins.

Table 1. **General questions**

CHARACTERISTICS OF THE PAIN
When do you most often get your headaches? (time of day or night, day of week)
Do you have any clues before the pain starts that it is coming?
What do you think makes the pain start?
Have you noticed what makes your headache worse?
When is the pain particularly bad?
What kind of pain is it? (throbbing, burning, pressure, sharp, aching)
Where exactly is the pain in your head?
Does the pain change or shift over time? If so, how?
What would you do that you can't do now because of your headaches? (Alternatively: How would your life be without headaches?)
AMELIORATION OF THE PAIN
What helps the pain to go?
Have you discovered anything that you can do that makes it ease?
What or who helps the pain to be manageable?
Is there anyone in the family who can help the pain to go? What do they do?
How much does the pain go down, and how long does it stay away?
How long does it stay away with the help of the family member?
Have you discovered anything that helps it stay away?
When is the pain okay and manageable?

As part of the assessment process, I ask children to draw their headaches as a means of communicating their pain. *Figures 2 and 3* show two such examples. The drawings also help as a starting point

for developing a treatment program that uses imagery, hypnosis, or relaxation methods.

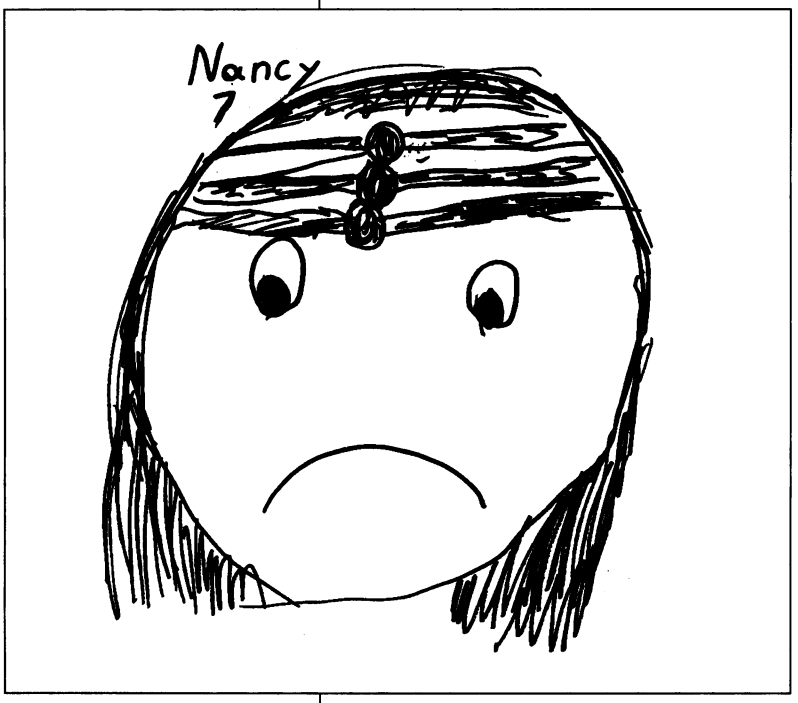


Figure 2. **Recurrent migraine tension headaches drawn by a 7-year-old girl**

When the pain puzzles you

When a child complains of pain in a manner that raises your doubts about the severity or basis of the pain, it is essential for successful pain management that doubts and concerns not be voiced. Challenging the veracity of the child's experience will invariably worsen the pain and damage your working alliance. Rather, you should listen closely to how the child describes the pain, the tone of voice, choice of words, and manner of delivery. These will convey the meaning of the pain for this child and provide clues to what is maintaining or exacerbating the pain.

It is important to remember that the pain is a real experience for the child, whether it is due to organic causes or more complex central nervous system origins. Children quickly perceive a lack of belief in their experience, and this can result in the child's closing down, feeling isolated, or becoming angry or resentful, all of which can make intervention difficult. Instead, exploring contextual and situational factors by tracking the pain through open-ended questions can illuminate the emotional overlay or social or family problems that could be maintaining the child's pain. Having a full appreciation of all the factors contributing to the pain allows the physician to offer all appropriate treatments, including pharmacologic, behavioural, or even family therapy.

Treatments

In pursuing relief of pain from headaches, most children and adolescents rely on rest and simple analgesics. Physicians express reservations about prescribing medication, such as β-blockers for tension headaches or mixed tension-migraine conditions, although they commonly prescribe these drugs for migraine headaches.

In a controlled, prospective study, Olness and colleagues[13] compared propanolol, placebo, and self-hypnosis for managing juvenile migraine. The frequency of headaches was significantly reduced only in the self-hypnosis group. While other studies have reported similar success in training children to manage pain with biofeedback and self-hypnosis, the authors caution that, while such training provides symptomatic relief, it is still necessary to search for causes.

Smith and his colleagues in Seattle[14] developed a behavioural treatment program for patients with recurrent headaches, using relaxation and imagery techniques together with skin temperature and electromyographic biofeedback. The children and adolescents were given eight to 12 biofeedback sessions and were asked to practise the relaxation-imagery exercise at home twice daily. Results indicated a significant reduction in headache frequency with minimal change in headache intensity. They conclude that most children aged 6 years and older with migraine, tension, or mixed headache will show clinical improvement following behavioural intervention. No conclusion could be drawn about which behavioural treatment was most helpful. Follow up at a mean period of 3 years after treatment indicated a sustained reduction in headache frequency.

I have found, similar to Olness and associates,[13] that hypnosis training for pain management of tension-migraine and migraine headaches usually requires only three to four sessions.

First session. During assessment I note lifestyle habits, such as sleep and eating patterns (for example, I have found that missing breakfast is common among teenaged girls with midday onset of headaches). I instruct the child in breathing and relaxation methods to reduce tension buildup, and a 10- to 15-minute audiotape, tailored to the particular child, is made for home or school use. The child is instructed to practise self-hypnosis at least once daily and complete a headache diary noting pain level, activity before onset, what helped, and how long it took for the pain to go down to a tolerable level.

Second session. This session is scheduled 1 to 2 weeks after the first session. The diary is closely reviewed, noting times of pain onset, contextual factors that preceded pain onset, and outcome pain level. The child's use of self-hypnosis is reviewed and elaborated, and problems are discussed with solutions jointly constructed with the child (eg, "How would it work if you did X instead of Y?"). Additional pain-reduction strategies can be added at this time, such as self-massage, use of cold or hot water, showers, and releasing exercises like cycling.

Third session. During this session I review what has happened, give directives for long-term management, and discuss what the child has discovered are the precipitating factors and how to avoid or reduce them. I then congratulate the child on his or her effort and good results. A 6-week follow-up visit can be scheduled, and the door is left open for any future problems. I have found that children with headaches are willing to continue to practise their pain-management techniques regularly for many months following intervention. Often these are children who have had severe and frequent headaches for 2 or 3 years before treatment, and their motivation to remain free of pain is high.

A multidisciplinary team at Children's Hospital of Eastern Ontario in Ottawa has developed a 15-week self-help program for children and adolescents suffering from migraines entitled *Help yourself: a treatment for migraine headaches.*[15] It consists of a professional manual, a manual for the child, and taped relaxation exercises. It is highly recommended for office practice, as it is time-efficient, structured to develop the child's coping skills, and designed for self-management.

Conclusion

Many adult patients who suffer regular migraine-tension headache pain can trace their first experience of headaches to childhood. A treatment program for headache relief that relies on a working alliance with the child and parents, and in which the child gradually assumes self-management of the headache, can help to alleviate years of suffering. Using psychologic methods for relieving pediatric headaches could reduce the incidence of headaches among adults in the future. ■

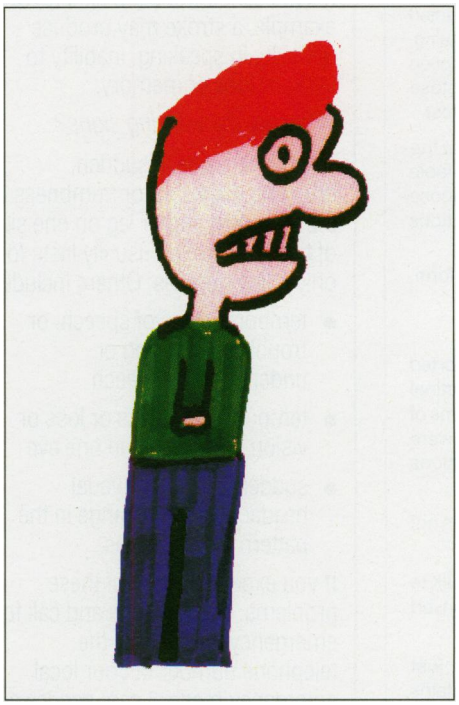


Figure 3. **Tension headache drawn by a 9-year-old boy**

Acknowledgment

I thank Dr Beverley Spring for her astute editorial comments and Drs Patricia McGrath, Charles King, and Jerry Phillipson for their helpful suggestions.

Requests for reprints to: *Dr L. Kuttner, Suite 204, 1089 West Broadway, Vancouver, BC V6H 1E5*

References

1. Beecher HK. Relationship of significance of wound to pain experienced. *JAMA* 1956;161:1609-13.

References: 1. Mishkin, S, MD., What's Causing The Patient's Bloating? The Canadian Journal of Diagnosis, June 1991: 672-674. **2.** Conn's Current Therapy, Philadelphia, PA, W.B. Saunders Company, 1990: 468-469.

What is a stroke?

A stroke results from an interruption in the blood supply to part of the brain. Without a continuous, adequate supply of oxygen-rich blood, nerve cells in that area cannot function properly. The nerve cells of the brain control the way we receive, interpret and respond to sensations and information, and most of our movements as well. If some nerve cells are unable to function, then the part of the body controlled by those nerves cannot function either. For example, a stroke may produce difficulty in speaking, inability to walk, or loss of memory.

What are the warning signs?

The primary one is sudden, dramatic weakness or numbness of the face, arm and/or leg on one side of the body, which usually lasts for only a few minutes. Others include:

- temporary loss of speech, or trouble in speaking or understanding speech
- temporary dimness or loss or vision, particularly in one eye
- sudden, severe, unusual headaches, or a change in the pattern of headaches.

If you experience any of these problems, tell someone and call for emergency help. Know the telephone number of your local emergency medical care service and use it!

The good news about stroke:

The best line of defence for any healthy person is an annual blood pressure check. Many strokes can be prevented if high blood pressure, a leading cause of stroke, is controlled through early diagnosis and prompt treatment.

In fact, stroke-related deaths have been decreasing, especially in recent years. Since 1980, deaths from stroke have declined by approximately five percent a year, largely due to the effective treatment of high blood pressure.

Today the outlook for every stroke patient is brighter because of the advances in diagnosis and medical treatment, as well as in improved rehabilitation.

For more information on stroke, contact your local office of the Heart and Stroke Foundation of Ontario.

2. Melzack R. *The puzzle of pain.* New York: Basic Books, 1973.
3. Schechter NL, Bernstein BA, Beck A, Hart L, Scherzos L. Individual differences in children's response to pain: role of temperament and parental characteristics. *Pediatrics* 1990;87:171-7.
4. Watt-Watson JH, Evernden C, Lawson C. Parent's perception of their children's acute pain experience. *J Pediatr Nurs* 1990;5(5): 344-9.
5. Dolgin MJ, Phipps S. Pediatric pain: the parent's role. *Pediatrician* 1989;16(1-2):103-9.
6. Kuttner L. *No fears, no tears: children with cancer coping with pain.* Videotape and manual. Vancouver: Canadian Cancer Society, 1986.
7. McGrath PA. *Pain in children: nature, assessment and treatment.* New York: The Guilford Press, 1990.
8. Sillanpaa M. Prevalence of migraine and other headache in Finnish children starting school. *Headache* 1976;16:288-90.
9. Sillanpaa M. Changes in the incidence of migraine and other headaches during the first seven school years. *Headache* 1983;23:15-9.
10. Bille B. Migraine in school children. *Acta Paediatr Scand*1962;51(Suppl 136):1-151.
11. Dalessio D. A clinical classification of headache. In: Dalessio D, editor. *Wolff's headache and other head pain.* 5th ed. New York: Oxford Unversity Press, 1987:3-13.
12. McGrath PJ, Humphreys P. Recurrent headaches in children and adolescents. *Pediatrician* 1989;16(1-2):71-7.
13. Olness K, MacDonald J, Uden D. A prospective study comparing self-hypnosis propanolol and placebo in managment of juvenile migraine. *Pediatrics* 1987;79:593-7.
14. Smith MS, Womack WM, Chen ACN. Intrinsic patient variables and outcome in the behavioral treatment of recurrent pediatric headache. In: Tyler DC, Krane EJ, editors. *Advances in pain research therapy.* Vol 15. New York: Raven Press Ltd, 1990:305-11.
15. McGrath PJ, Cunningham SJ, Lascelles MA, Humphreys P. *Help yourself: a treatment for migraine headaches.* Ottawa: University of Ottawa Press, 1990.

• • •